Annual Review of Biochemistry
Volume 62, 1993

CONTENTS

FROM BACTERIAL NUTRITION TO ENZYME STRUCTURE: A PERSONAL ODYSSEY, *Esmond E. Snell* 1

EUKARYOTIC DNA REPLICATION: ANATOMY OF AN ORIGIN, *Melvin L. DePamphilis* 29

ANALYSIS OF GLYCOPROTEIN-ASSOCIATED OLIGOSACCHARIDES, *Raymond A. Dwek, Christopher J. Edge, David J. Harvey, Mark R. Wormald, and Raj B. Parekh* 65

PROTEIN TYROSINE PHOSPHATASES, *Kevin M. Walton and Jack E. Dixon* 101

THE STRUCTURE AND BIOSYNTHESIS OF GLYCOSYL PHOSPHATIDYLINOSITOL PROTEIN ANCHORS, *Paul T. Englund* 121

STRUCTURAL AND GENETIC ANALYSIS OF PROTEIN STABILITY, *Brian W. Matthews* 139

GENERAL INITIATION FACTORS FOR RNA POLYMERASE II, *Ronald C. Conaway and Joan Weliky Conaway* 161

HUMAN GENE THERAPY, *Richard A. Morgan and W. French Anderson* 191

NUCLEOCYTOPLASMIC TRANSPORT IN THE YEAST *Saccharomyces cerevisiae*, *Mark A. Osborne and Pamela A. Silver* 219

DETERMINATION OF RNA STRUCTURE AND THERMODYNAMICS, *John A. Jaeger, John SantaLucia, Jr., and Ignacio Tinoco, Jr.* 255

hnRNP PROTEINS AND THE BIOGENESIS OF mRNA, *Gideon Dreyfuss, Michael J. Matunis, Serafín Piñol-Roma, and Christopher G. Burd* 289

MEMBRANE PARTITIONING DURING CELL DIVISION, *Graham Warren* 323

MOLECULAR CHAPERONE FUNCTIONS OF HEAT-SHOCK PROTEINS, *Joseph P. Hendrick and Franz-Ulrich Hartl* 349

BIOCHEMISTRY OF MULTIDRUG RESISTANCE MEDIATED BY THE MULTIDRUG TRANSPORTER, *Michael M. Gottesman and Ira Pastan* 385

(*continued*)

CYTOPLASMIC MICROTUBULE-ASSOCIATED MOTORS, *R. A. Walker and M. P. Sheetz* 429

SIGNALLING BY RECEPTOR TYROSINE KINASES, *Wendy J. Fantl, Daniel E. Johnson, and Lewis T. Williams* 453

NEW PHOTOLABELING AND CROSSLINKING METHODS, *Josef Brunner* 483

MEMBRANE-ANCHORED GROWTH FACTORS, *Joan Massagué and Atanasio Pandiella* 515

STRUCTURE-BASED INHIBITORS OF HIV-1 PROTEASE, *Alexander Wlodawer and John W. Erickson* 543

INTRONS AS MOBILE GENETIC ELEMENTS, *Alan M. Lambowitz and Marlene Belfort* 587

THE TUMOR SUPPRESSOR GENES, *Arnold J. Levine* 623

PATHWAYS OF PROTEIN FOLDING, *C. Robert Matthews* 653

CONFORMATIONAL COUPLING IN DNA POLYMERASE FIDELITY, *Kenneth A. Johnson* 685

COGNITION, MECHANISM, AND EVOLUTIONARY RELATIONSHIPS IN AMINOACYL-tRNA SYNTHETASES, *Charles W. Carter, Jr.* 715

TRANSCRIPTIONAL REGULATION BY cAMP AND ITS RECEPTOR PROTEIN, *A. Kolb, S. Busby, H. Buc, S. Garges, and S. Adhya* 749

OXIDATION OF FREE AMINO ACIDS AND AMINO ACID RESIDUES IN PROTEINS BY RADIOLYSIS AND BY METAL-CATALYZED REACTIONS, *E. R. Stadtman* 797

THE RECEPTORS FOR NERVE GROWTH FACTOR AND OTHER NEUROTROPHINS, *Simona Raffioni, Ralph A. Bradshaw, and Stephen E. Buxser* 823

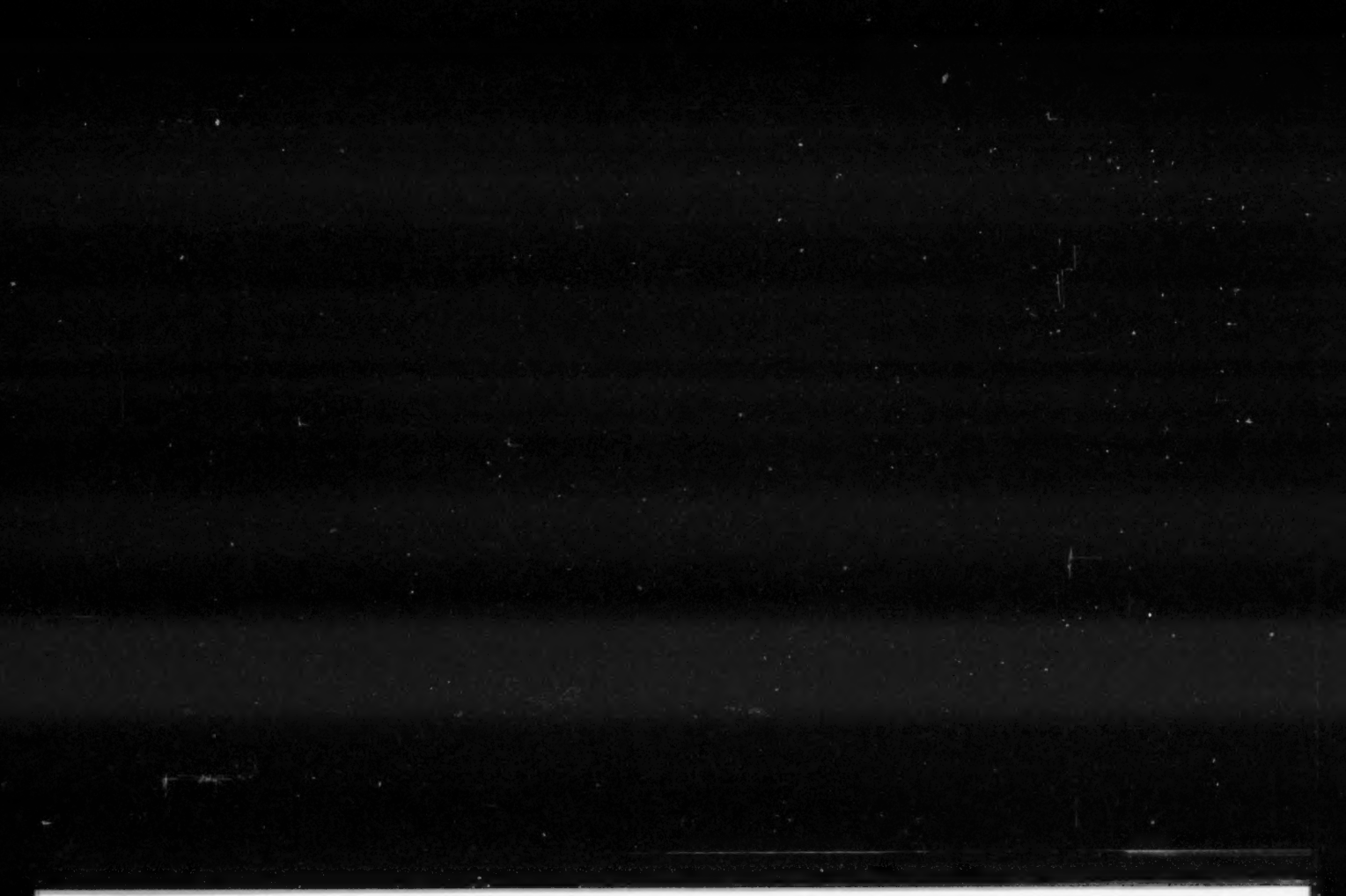
FUNCTION AND REGULATION OF *RAS*, *Douglas R. Lowy and Berthe M. Willumsen* 851

CONTROL OF TRANSCRIPTION TERMINATION BY RNA-BINDING PROTEINS, *Asis Das* 893

INDEXES

Author Index 931

Subject Index 991

Cumulative Index of Contributing Authors, Volumes 58–62 1025

Cumulative Index of Chapter Titles, Volumes 58–62 1029